F. C. Lowthorp.

Truss Bridge.

No. 27,457. Patented Mar. 13, 1860.

Fig. 1.

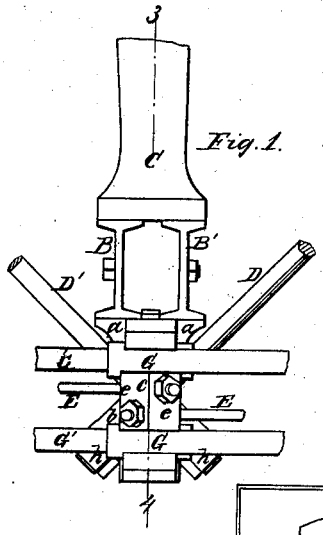


Fig. 3.

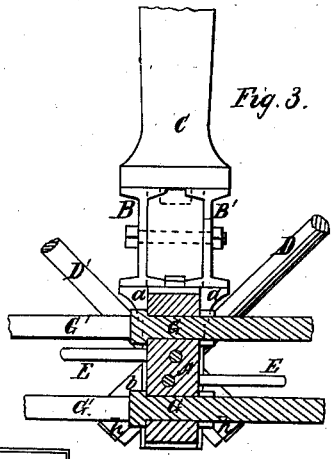


Fig. 6.

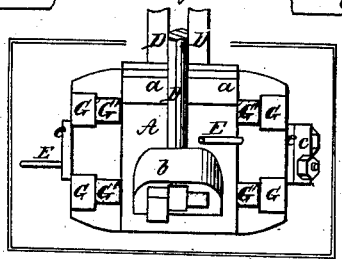


Fig. 2.

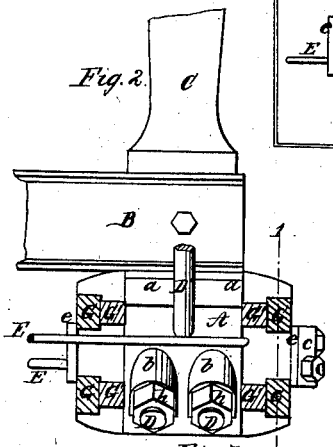


Fig. 4.

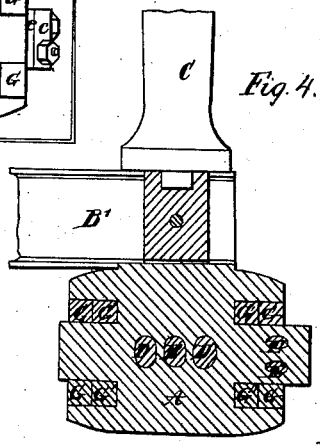


Fig. 7.

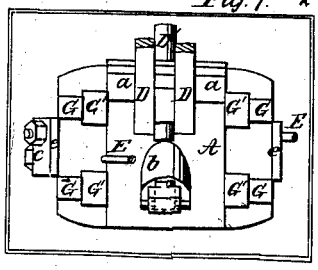


Fig. 5

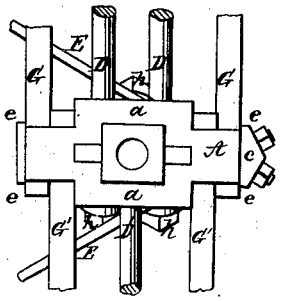
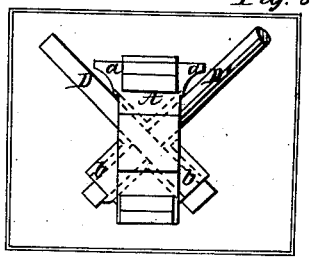


Fig. 8.



Witnesses,

Henry Howson

Horace See

Inventor,

F. C. Lowthorp

UNITED STATES PATENT OFFICE.

FRANCIS C. LOWTHORP, OF TRENTON, NEW JERSEY.

PLATE FOR SECURING CHORDS, BRACES, &c., OF TRUSS-BRIDGES, &c.

Specification of Letters Patent No. 27,457, dated March 13, 1860.

To all whom it may concern:

Be it known that I, FRANCIS C. LOWTHORP, of Trenton, in the county of Mercer and State of New Jersey, have invented a new and useful Improvement in Bridges; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention consists of a combination plate with open slots adapted to receive, and arranged in respect to, the enlarged ends of lower chord rods and also arranged to receive the verticals and diagonals of a truss frame or other bridge substantially as described hereafter.

The object of my invention is to facilitate the erection of the bridge, and to afford a secure attachment for the chord rods to the combination plate, without the necessity of the expensive forging and machine work employed on the lower chords of other bridges.

In order to enable others skilled in the art to make and use my invention I will now proceed to describe its construction and operation.

On reference to the accompanying drawing which forms a part of this specification Figure 1, is a side view of sufficient of an iron truss frame bridge to illustrate my improvement. Fig. 2, a transverse section of part of the bridge. Fig. 3, a section on the line 1, 2 Fig. 2. Fig. 4 a section on the line 3 4 Fig. 1. Fig. 5 a plan view, and Figs. 6 and 7, and 8, views illustrating a modified plan of securing the diagonals to the combination plate.

Similar letters refer to similar parts throughout the several views.

On reference to Figs. 1, 2, 3, 4 and 5, A represents one of the combination plates, B and B′ the ends of two transverse or floor beams resting on the lugs *a a* of the plate, C one of the vertical posts, D and D′ the diagonals, E the horizontal diagonals, and G G and G′ G′, the lower chord rods of an iron truss frame bridge.

The diagonals D D′ pass directly through openings in the body and near the middle of the combination plate on which are cast inclined projections *b b* forming bearings for the nuts *h h*, the latter being screwed onto the ends of the diagonals, serve to connect the latter to the combination plate.

The horizontal diagonals E E pass through inclined openings in the body of the same plate and are secured to the latter by nuts which bear against the inclined surfaces on the end *c* of said plate, as best observed on reference to Fig. 5.

The lower chord rods G and G′ consist of plain square bars of wrought iron set up at the opposite ends so as to form the enlargements or T heads illustrated in the drawing.

Slots are formed on the opposite ends of the combination plate, each slot being large enough to admit the ends of two adjacent rods which are connected to the plate by simply sliding them laterally into the slots, the T heads of one set of rods G bearing on one side of the plate, and the T heads of the adjacent rods, on the opposite side of the same plate. Small lips *e e* Fig. 2, cast on the opposite ends of the plate serve to retain the ends of the rods in their proper position within the slots.

It will be readily seen that the enlarged ends of the rods formed by beating or setting up the latter when heated, will afford the most substantial and secure medium for resisting the strain imparted to the lower chord rods, that but little manual labor is required for forming these enlargements, that the small amount of forged work demanded has no tendency to deteriorate the metal, but on the contrary to make it more compact and safe, and that in the above respects the manner of constructing and fastening the chords is much superior to the ordinary riveted attachments, to the link arrangement adopted in what is known as the Whipple bridge, as well as to the nut and screw plan adopted in the patent granted to me on the 30th day of June 1857 inasmuch as the riveting requires tedious and laborious manipulation, and the links a number of weldings, the nut and screw arrangement requiring expensive forged as well as machine work. It will also be seen that the open slots of the combination plate and enlarged ends of the rods afford those facilities for ready erection of the bridge which are not presented by any of the usual modes of constructing and attaching lower chord rods.

The views, Figs. 6, 7 and 8, illustrate a mode of connecting the diagonals to the combination plate by means of enlarged or T heads, instead of screw nuts. When this plan is adopted an opening is formed in the combination plate large enough to admit the

ends of the whole of the diagonals which have to be connected to the said plate, the opening being larger in the middle than at the ends.

The enlarged ends of the diagonals D D are inserted one after the other into the middle of the opening and then moved laterally so as to fit one into one end and the other into the other end of the opening the diagonal D is then inserted into the middle of the opening and its projecting end turned around, so that when drawn tight its shoulders may catch against the plate as seen in Fig. 7. By this arrangement the diagonal D′ serves to maintain the diagonals D D in their proper position.

Although I have illustrated and described a slotted combination plate for receiving the ends of eight chord rods, it will be evident that a plate may be so modified as to be adapted to the reception of more or less than this number of rods. It will also be seen that my improvement is applicable to suspension bridges and other structures in which diagonals, verticals, chord rods and combination plates are used.

I claim as my invention and desire to secure by Letters Patent—

The combination plate A with open slots adapted to receive and arranged in respect to the enlarged ends of the chord rods G and G′, and also arranged to receive the verticals and diagonals of a truss frame or other bridge substantially as and for the purpose herein set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

F. C. LOWTHORP.

Witnesses:

HENRY HOWSON,

CHARLES D. FREEMAN.